

Retrospective Chart Audit of a Rural Family Practice to Identify Obesity and Current  
Interventions for Quality Improvement

DNP Final Project

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By

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### Dedication

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### Abstract

Childhood obesity prevalence is a concern nationwide. Pediatric patients who are overweight or obese have an increased risk of developing physical and emotional health issues. As with many diseases, obesity prevention and early detection is associated with more favorable long-term health outcomes. Health care providers who care for pediatric patients are uniquely poised to identify and intervene for children who are overweight or obese. Despite the known risks of obesity, providers often struggle to prevent and effectively manage the needs of overweight pediatric patients to prevent obesity. In 2015, Reyes reported that only thirty-one percent of the overweight and obese pediatric population was documented as such in health records. The lack of documentation in health records can adversely affect the population by increasing co-morbid conditions at an early age. Acknowledging an elevated BMI percentile with a formal diagnosis is the first step to discussion with patients and families.

The purpose of this project was to analyze pediatric visits in a rural family practice clinic for children aged 3-12 years in order to assess the extent to which obesity occurs in this clinic and was documented in the health record. Retrospective data were collected to assess the number of visits where patients had elevated BMI percentiles according to CDC definitions. A BMI percentile between the 85<sup>th</sup>-94<sup>th</sup> percentile indicates overweight and greater than or equal to the 95<sup>th</sup> percentile indicates obesity. Additional data were gathered to characterize the clinic sample by age, gender and current interventions. Recommendations for future quality improvement projects based on these results were proposed.

## Chapter I

### Introduction

Childhood obesity is a growing public health epidemic that can lead to numerous disease states such as hypertension, diabetes, heart disease, joint disorders, psychological disorders and cancer (Centers for Disease Control and Prevention [CDC], 2014). The overall prevalence of pediatric obesity in the United States is 17 percent (Ogden, Carroll, Kit, & Flegal, 2014). Although the pediatric obesity rate remained stable between 2009-2010, the public health risks from this epidemic remain a concern (Ogden et al., 2014). This level of obesity has resulted in new screening needs for diseases that are more common in adulthood; e.g., type 2 diabetes mellitus and hypertension. *Healthy People 2020* objectives one through 22 address goals for decreasing pediatric obesity. Objective 10-4 calls for a reduction in overweight and obesity in children aged 2-19 to no more than 14.5 percent of the general population (Office of Disease Prevention and Health Promotion [ODPHP], 2015).

Children who are overweight or obese have an increased risk of developing physical and emotional health issues. Not only is the child impacted, but poor health negatively affects families, schools, and communities (Harvard School of Public Health, 2014). As with many diseases, prevention and early detection are associated with more optimal long-term outcomes. Health care providers who care for pediatric patients are uniquely poised to identify and intervene for those children who are overweight or high risk for obesity.

Healthy diet and regular exercise are known to decrease obesity and prevent weight increases. However, there are multiple socioeconomic barriers and cultural beliefs that can function as barriers to achieving adequate nutrition and physical activity. A challenge that is faced by providers and patients is to decrease the impact of chronic diseases such as cancer,

pulmonary diseases, cardiac disease, diabetes and mental disorders (Brown, 2013) via appropriate lifestyle change interventions; e.g., healthy diet and physical activity that can prevent or reduce the risks of these diseases. Obesity can increase the risk of many of these health conditions and can be prevented.

There are multiple sources of health disparities that may not allow for individuals in rural and impoverished regions to obtain healthy food. Fresh fruits and vegetables are often more expensive than fast food. Healthy food choices may also not be readily available as many rural areas are 'food deserts' (Frederick, Snellman, & Putman, 2014). The built environment may not be conducive to frequent outdoor activities and economical exercise. Walking to school or work may not be an option due to safety concerns or distance. Many rural areas lack adequate grocery stores and only offer limited fresh produce. Parks and recreation opportunities that support physical activity are not readily available or in poor condition. Providers must understand available community resources to assist with obesity prevention and interventions.

Health care providers and leaders who care for pediatric patients are uniquely poised to identify and discuss concerns related to childhood obesity with the child, parent or caretaker. From these discussions, interventions for overweight and obese children may be developed.

Despite the known risks of obesity, providers often struggle to prevent and manage overweight pediatric patients. In 2015, Reyes reported that only thirty-one percent of overweight and obese pediatric patients were documented. The first step of dealing with childhood overweight and obesity is to identify the problem. For the purposes of this DNP quality improvement project, the incidence of overweight and obesity in children ages 3 – 12 in a rural family practice were assessed. Retrospective data were collected to assess the number of visits where patients had elevated BMI percentiles greater than or equal to the 85th percentile. Further

information was obtained on age, gender and current interventions used to address overweight and obesity in the identified population.

This project did not require Institutional Review Board (IRB) approval as this project was considered by the IRB to be a quality improvement initiative. All collected data were de-identified and could not be linked to specific individuals. Institutional Review Board (IRB) exemption was obtained (Appendix A). Approval was also obtained from the Wilson Health HIPAA compliance officer.

### **Clinical Problem**

Despite increased awareness by health care providers and patients, obesity has continued to increase leading to more chronic disease states at earlier ages. Diseases and complications from obesity create increased health care expenditures and burdens on individuals, families and communities (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). A needs assessment of Shelby County Ohio (Healthy Communities Institute, 2015) revealed a 31.71 percent rate of obese children in third grade. The assessment revealed 12 percent of low-income preschool obesity with a 22.3 percent child food insecurity rate which can increase the risk of obesity. Although this number decreased from 46.8 percent between 2004-2005 (Healthy Communities Institute, 2015), the area still has higher than the national average and above the goal rate for *Healthy People 2020* (Healthy Communities Institute, 2015; Office of Disease Prevention and Health Promotion [OHPHP], 2015; U. S. Department of Health and Human Services [HRSA], n.d.). Children of all ages have problems with overweight and obesity. Third graders were used as an example of children of many ages in both the HRSA and Shelby County health reports (HRSA, n.d.; Healthy Communities Institute, 2015). It was noted that neighboring counties were similar, or worse than the pediatric obesity rate in Shelby County (Healthy Communities Institute, 2015).

This DNP quality assurance project was completed at a family practice in a rural county in Ohio. The author was a provider during 2014 at the rural clinic. Through informal observation, the office staff (registered nurse, physician, certified nurse practitioner, and medical assistant) reported that there seemed to be an increase in overweight and obese children in the practice, especially among pre-school and elementary (3-12 year olds) children. However, the perceived increase in pediatric overweight and obesity was not routinely documented in the chart. When an elevated BMI (body mass index) percentile was assessed, a formal diagnosis was not documented.

To better understand the number affected by elevated BMI percentiles and current interventions, a retrospective chart audit was completed. The data collected included age, BMI percentile, gender, formal documentation of diagnosis of overweight or obesity, and if any intervention was performed (i. e. education, referral, laboratory testing). Studies have reported variable rates of BMI percentile documentation ranging from 5.5% to 61% (Hillman, Corathers, & Wilson, 2009; Rose, Turchin, Grant, & Meigs, 2009). Lack of documentation decreases the potential for identification and management of overweight and obese children. The collected data allowed the clinic to increase awareness of the need for accurate height and weight measurements, and the need to determine accurate BMI percentiles for each child for appropriate diagnosis. Identification of these needs may lead to evidence-based interventions for future quality improvement initiatives.

### **Purpose**

The purpose of this project was to evaluate the number of overweight and obese pediatric patients from 3-12 years old in a rural family practice. This project assessed the BMI percentiles from all pediatric patients age 3 to 12 who were patients in the rural family practice in 2014. If a



BMI percentile was at or above the 85<sup>th</sup> percentile, the chart was explored to assess if a formal weight related diagnosis was made. A retrospective chart audit to identify interventions for obesity related diagnoses including dietary counseling, exercise recommendations, laboratory testing, or referrals was completed. The gathered information was presented to senior leadership of the parent organization, Wilson Health, for quality improvement purposes.

### **Significance to Nursing**

Nurses at all levels are responsible for educating, advocating and partnering to help prevent disease and illness, including childhood obesity (American Nurses Association [ANA], 2010). All healthcare providers are responsible for promoting health and encouraging preventative services. Through education of patients, families, schools, and caregivers, healthy behaviors can be taught and reinforced. Nurses must also be aware of community resources that are available to meet the needs of families and children. Knowledge of local resources can decrease stress and burden on families and encourage healthy lifestyles (ANA, 2010; Office of Disease Prevention and Health Promotion [OHPHP], 2015).

Advanced practice registered nurses (APRN), and especially doctoral prepared APRNs, are uniquely prepared to assess and intervene with patients and families that have overweight and obese children. The American Association of Colleges of Nursing (AACN) (2006) describes the role of the DNP graduate as a nurse that is prepared to be intimately involved in practice that includes interdisciplinary collaboration, quality improvement, patient safety, and knowledge of organizational and community systems. The AACN lists eight DNP essentials that the graduate should have mastery of at graduation. The DNP Essentials include:

- Scientific Underpinnings for Practice;
- Organizational and Systems Leadership for Quality Improvement and Systems Thinking;

- Clinical Scholarship and Analytical Methods for Evidence-Based Practice;
- Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care;
- Health Care Policy for Advocacy in Health Care;
- Interprofessional Collaboration for Improving Patient and Population Health Outcomes;
- Clinical Prevention and Population Health for Improving the Nation's Health;
- Advanced Nursing Practice.

The DNP graduate will be able to address pediatric obesity from a systems and organizational standpoint. Through the use of literature reviews that assess the science and social aspects of pediatric obesity, technology and collaboration with multiple stakeholders will assist the providers to develop evidence-based prevention and intervention strategies. Application of the DNP Essentials in evaluating pediatric obesity from multiple angles will enhance understanding of the populations needs.

This DNP project used several of the AACN DNP Essentials (2006) to guide development of the project. A literature search to identify current best practices and guidelines related to the prevention and treatment of overweight and obese pediatric patients occurred prior to data collection. DNP Essential I states that DNP graduates are able to critically appraise literature to identify best practices and translate findings into clinical practice. Review and assessment of such guidelines allowed for comparison of current practices at the rural clinic to current guidelines and expert recommendations.

DNP Essential II (AACN, 2006) relates to the critical need for DNP leaders to use organizational and systems leadership to improve patient care. The basis of this project is to assess the current care provided to overweight and obese pediatric patients and identify areas for improvement. Essential II will continue to be of great importance as a formal plan for quality

improvement at the rural clinic is developed.

This project encompassed DNP Essential IV (AACN, 2006) through use of the electronic medical record (EMR) to identify patients meeting project criteria. The EMR allowed for readable information in a relatively systematic way. The EMR also calculated the BMI percentile, decreasing data collection time. Most importantly, the project was useful in identifying potential areas for improvement related to documentation for ancillary staff and providers. In the future, the EMR can be used for quality improvement through the use of alerts, reports, and predetermined protocols.

DNP Essential VIII (AACN, 2006) has unique applicability to this final project. Advanced practice nurses have increased knowledge about various aspects of healthcare. This may include physical assessment, critical appraisal of literature, knowledge of applicable health care systems, and leadership. These skills, coupled with knowledge gained during the DNP curriculum, are the foundation of DNP Essential VIII. This project was initiated through observations by an advanced practice nurse due to concern for the health of a specific population at the rural clinic. This essential will continue to be instrumental as this quality improvement project moves forward. Although not all eight DNP Essentials (AACN, 2006) were initially used for this project, they will certainly be instrumental moving forward.

### **Project Objectives**

1. Identify the current pediatric population in a rural family practice clinic that meet criteria for overweight and obesity according to CDC guidelines.
2. Identify areas for quality improvement.
3. Identify current strategies for treatment of overweight and obesity.

## **Chapter 2**

### **Review of Literature**

#### **Summary of Literature**

Pediatric obesity is a worldwide problem. Obesity crosses numerous racial, gender, and ethnic populations. However, subpopulations may have different risk factors that contribute to the development of pediatric obesity. The Glass and McAtee (2006) model offers a schematic approach to the development of disease states such as obesity. This model acknowledges the many variables and contributing factors to the development of chronic disease states. Activity and nutrition are affected by numerous variables such as culture, geographic location, socioeconomic status, and genetics. Pediatric obesity not only increases the risk of health issues in childhood, but also increase the risk of adulthood conditions. Thus, the screening and treatment of pediatric obesity should occur routinely in the primary care setting. The literature was reviewed for best practices related to documentation and screening for pediatric overweight and obesity. Data from the retrospective chart audit was able to be compared to best practices, current guidelines, and expert recommendations.

#### **Organizational Framework**

The organizational model used to guide this DNP Final project and future interventions is based on the Glass and McAtee (2006) model (Appendix B). This model allows for evaluation of the relationship of social, environmental and genetic influences that affect the development of pediatric obesity. Through exploration of the Glass and McAtee model, recommendations can be made to address this population's health needs and improve overall health of the community. Pediatric obesity has multifactorial causes and treatment cannot be focused on only one aspect.

Glass and McAtee (2006) used obesity as an example of how their model relates to identification of physical, societal and environmental influences on the development of obesity. Treatment of obesity can be complicated and costly, therefore any interventions should be based on science and population needs. Challenging factors of obesity treatment include food availability, cultural and behavioral norms. Biological factors also influence obesity through hormone regulation, genetic predisposition, and other biomarkers. Ground level social conditions such as the built environment, exercise and nutrition habits, and housing situations can also increase negative health conditions. When assessing a population using the Glass and McAtee (2006) model, health care providers must be aware that manipulation at any level will affect other levels. This may be positive or negative. Ongoing evaluation of interventions to prevent and treat pediatric obesity will need to occur to optimize patient care at a personal and organizational level.

## **Related Research**

### **Meaningful Limits**

Studies that are considered high-levels of evidence were desired for evaluation. This included randomized controlled studies (RCT), systematic reviews (SR), and meta-analyses (MA) (Oregon Health & Science University, 2014). These limits were placed to allow for only high-level studies to potentially be used to answer the clinical question. However, there was limited high-level results that met the criteria for the age range of children, similar community attributes, dated 2010-2015, and based in the United States. Therefore, literature that focused on expert recommendations and clinical practice guidelines was included.

### **Identification**

There were 567 articles initially identified through PubMed database searching. The search was further refined to publications between 2010 and 2016 leaving 321 records for review. No other sources were used at that time.

### **Screening**

All 321 records were then screened. Titles and vocabulary were screened and removed if not pertinent to the clinical question. The following exclusions were utilized: interventions, wrong age group, and too specific of a population. After exclusions, 50 reports were left for further review.

### **Eligibility**

Fifty full-text reports were assessed for eligibility. Out of the reports reviewed, 32 were reviewed for applicability to the clinical question. Reasons for exclusion were as follows: (a) full-text article was not available, (b) the study focused on interventions, (c) the population was not appropriate, (d) the report addressed a specific medical condition not related to population of interest, (e) the sample size was too small, (f) setting not applicable, (g) repeat study, (h) not pertinent to clinical question, (i) English version could not be accessed. After further review, 15 reports were included. **Clinical Practice Guidelines**

Before treatment or interventions can begin, it is necessary to identify key factors to include in documentation. Reed, Cygan, Lui, and Mullen (2015) completed a retrospective chart audit to assess provider adherence to American Academy of Pediatrics (AAP) screening items (Table 1) for prevention and intervention. The first column in the table identifies items to be documented for normal weight children and for prevention of developing obesity. "Prevention plus" documentation are additional items needed for children classified as overweight or obese

based on BMI percentile (Barlow, 2007). The authors reported that formal diagnosis with an ICD-9 code has been found to be as low as 0.93%, despite a BMI percentile above the 85<sup>th</sup> percentile, that would indicate qualification for a diagnosis. Reed, et. al. (2015) further noted that although many of the AAP screening questions were documented, there was a lack of consistency and follow through with interventions. Reyes (2015) had similar results in a pediatric clinic. This clinic had forty percent of their pediatric population with a BMI percentile greater than or equal to the 85<sup>th</sup> percentile. Of those equal or above the 85<sup>th</sup> percentile for BMI, only 35% had documentation in accordance with AAP guidelines (American Academy of Pediatrics [AAP], 2015). Lack of adequate documentation and formal diagnosis of excess weight disorders is unfortunately lacking in primary care and clinics focused on pediatrics.

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Table 1

American Academy of Pediatrics Screening

Prevention Documentation

- Parental obesity
- Family history
- Sleep disorders
- Water intake
- Fruit and vegetable intake
- Screen time
- Physical activity
- Sugary beverage intake
- Cardiovascular health
- Counseling in identified problem behaviors

Prevention Plus Documentation

- Weight classification listed in Problem list
- Weight classification added as diagnosis
- Respiratory difficulties
- Gastrointestinal problems
- Endocrine disorders
- Orthopedic disorders
- Genetic syndromes
- Appropriate labs ordered within 2 years
- Follow-up appointment made for 6 months
- Follow-up appointment attended for weight

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American Academy of Pediatrics recommendations for identification, prevention, and management of childhood obesity (Barlow, 2007)

Multiple other studies also demonstrated variations of the AAP guidelines for screening and treatment of obesity that included didactic programs for patients, families, communities and providers (Kunin-Batson et al. 2015). Other authors also demonstrated that the development of obesity is multifactorial and treatment should to be tailored to patients and family needs and

beliefs (Barlow, 2007; Dietz, 2015; Gibson, 2015; Kunin-Batson et al., 2015). Programs included not only nutritional and physical activity interventions, but focused on the community, schools, counseling, and behavior modification (Dietz, 2015; Tanda & Salsberry, 2014). The AAP update for pediatric obesity included decreasing sugar-sweetened beverages and if desired, to limit them minimal time in the home. Water, fruits and vegetables should be readily available in plain sight to increase the likelihood of children reaching for healthy choices. The AAP also recommended limiting screen time by having fewer televisions and media in the home, especially in bedrooms. The last update is to encourage children to obtain at least nine hours of sleep per night (AAP, 2015).

Several professional and governmental organizations have developed guidelines for screening and treatment of pediatric overweight and obesity. The US Preventative Services Task Force (USPSTF) (US Preventative Services Task Force [USPSTF], 2009) completed a literature review and has supplied recommendations for screening and treatment of obesity. Screening of all children age six year and older is recommended. However, no recommendation as to the frequency of screening was noted. The USPSTF (2009) also recommended that moderate to high-intensity programs yielded the best results as measured by a decrease in BMI percentiles. Programs are to include physical activity (at least 60 minutes per day of moderate to vigorous activity), nutritional counseling, and behavior change of the child and parents, especially in younger children (Agency for Healthcare Research and Quality [AHRQ], 2013; Thury & Melo de Matos, 2015). Pharmacologic interventions are not recommended, and reported to yield only mild results in weight reduction. Medications are not indicated in children under 12 years old and therefore limit their applicability. The USPSTF (2009) identified a need for further research



that identified specific evidence-based interventions and research with long-term follow-up of more than five years.

Kirschenbaum and Gierut (2012) reviewed treatment strategies for pediatric obesity from five committees and organizations including: 2007 Health Care Organizations' four stage model, 2007 Canadian clinical practice guidelines, 2008 Endocrine Society recommendations, 2009 seven step model, and 2010 U.S. Preventive Task Force recommendations. All reviewed treatment guidelines included some combination of self-help groups, outpatient cognitive behavioral therapy, immersion therapy and bariatric surgery. In alignment with USPSTF (2009) guidelines, pharmacologic interventions are discouraged, as they do not have Food and Drug Administration (FDA) approval (Kirschenbaum & Gierut, 2012). Upon review of the expert guidelines, Kirschenbaum and Gierut (2012) deduced, that in order for any of the interventions to succeed, initial identification of obese children needs to occur with the primary care provider. Providers should also be aware of available resources within their communities to direct patients and families for more in depth care.

The Agency for Healthcare Research and Quality (AHRQ) (Agency for Healthcare Research and Quality [AHRQ], 2013) encourage prevention and early identification of risk factors for overweight and obesity that includes: vital signs, family history, co-morbid conditions (gallbladder disease, sleep disorders, thyroid conditions, orthopedic conditions, and diabetes), and consideration of genetic disorders as secondary causes of obesity. When comorbid conditions or risk factors exist, a lipid profile is to be completed and lifestyle behaviors modified as indicated. AHRQ (2013) have stated interventions for children age two and older with a BMI greater than or equal to the 85<sup>th</sup> percentile. These include the aforementioned screening and laboratory testing, along with decreasing caloric intake by 200-500 kilocalories per day, and

considering a moderate to high-intensity multidisciplinary treatment program. Children age two and older with a BMI percentile greater than or equal to 95 should again have frequent biometric screenings, lipid profile, blood urea nitrogen and creatinine levels every two years. These patients should also have intensive multidisciplinary intensive behavioral and nutritional counseling with the goal to obtain and maintain a BMI percentile of 85 or less (AHRQ, 2013).

The Institute for Clinical Systems Improvement (ICSI) (Fitch et al., 2013) have developed a detailed algorithm (Appendix C) for screening and subsequent interventions for pediatric overweight, obese and high-risk children. As with other recommended guidelines, when a BMI percentile is equal to or above the 85<sup>th</sup> percentile, a lipid profile should be obtained (AHRQ, 2013; Fitch et al., 2013). However, ICSI also recommends screening fasting glucose, aspartate transaminase, and alanine transaminase. This algorithm also encourages providers to assess the readiness to change of the family and patient depending on age. Four stages of intervention can then begin that include office based interventions within the primary care setting, a structured weight management program, a comprehensive multidisciplinary intervention in a specified pediatric program, and commencing with interventions in a tertiary care center (Fitch et al., 2013).

The 2007 Expert Committee Recommendations (Barlow, 2007; Institute for Health Childhood Weight [IHCW], 2015) developed algorithms using the AAP (2015) guidelines that mimic the ICSI recommendations (Fitch et al., 2013). This protocol offers increased specificity for monitoring the patient and frequency of visits. Similar to the four-stage model offered by Fitch, et al. (2013), this pathway encourages advancement through each stage until the desired outcome is achieved. Stage one occurs in the primary care office focusing on behaviors that may be adversely affecting weight and seen as important by the patient and/or family. This is the

time when the family unit should be assessed for a readiness to change and focus on small behavior changes. Stage two is more structured and can be completed in a primary care setting if the provider has been trained to do so. The patient should be seen in the office every 2-4 weeks for counseling and biometric screening. If after 3-6 months, an improvement has not occurred, then proceed to stage three. This stage is a multidisciplinary approach that should be conducted in a pediatric weight management clinic that includes short and long term goals that are more aggressive in nature. A decrease in BMI percentile should be noted within 3-6 months after initiation, and if not, then the patient should be moved to a stage four program. During stage four, the child should be monitored at a tertiary care center that has formal training in the treatment of obese children. This type of program should include intensive exercise and nutrition counseling, cognitive behavior therapy and possibly medication or bariatric surgery (Appendix D). Any comorbid conditions should also be treated aggressively to decrease mortality (Barlow, 2007; IHCW, 2015).

### **Gaps in Literature**

Based upon the reviewed literature and published guidelines, it is evident that consistent, long-term follow-up of interventions for the treatment of pediatric overweight and obesity are lacking. Long-term follow-up will be required to identify interventions and prevention strategies that have the largest impact on healthy weight status and comorbid conditions.

Expert guidelines and recommendations lack specific instructions for implementing the guidelines. Although practice locations and specific populations may have slightly different needs, specific interventions would benefit providers that may have limited resources, especially in rural and outlying areas. Guidelines are based on current literature, however, there is a lack of reproducible studies that allow for true identification of specific best-practices. In a prior

literature review related to interventions for pediatric obesity, multiple combinations of variables were noted. There were also limited studies on similar populations. This leads to difficulty in producing specific guidelines in the pediatric overweight and obese populations.

Kirschenbaum & Gierut, (2012) reported concern that there are not enough adequately trained providers and specialists to accommodate the obese pediatric patients. Expert guidelines suggest when to refer to higher levels of care, however those resources may not be readily available for providers or patients and cause difficulty in adhering to guidelines. Further research is needed towards identification of specific interventions that have shown long-term benefits for reducing and maintaining healthy BMI percentiles. There should also be secondary guidelines developed that are specific to areas that lack access to specialized treatment centers to decrease disparities.

Pediatric overweight and obesity identification and treatment is imperative to overall health and wellbeing. However, prevention of these conditions should be included with other routine screenings and treatments. Just as prevention of cardiovascular disease, diabetes and chronic obstructive pulmonary disease is a concern in the primary care setting, prevention of overweight and obesity should also be high priority. Guidelines have been constructed from several organizations with recommendations for interventions for overweight children, yet there is a paucity of literature and guidelines for prevention and maintenance of normal weight children.

## **Chapter 3**

### **Methods**

#### **Project Design**

This DNP QI project focused on collecting anthropometric data from the electronic medical records (EMR) including age, body mass index (BMI) percentile, gender, diagnoses related to overweight and obesity, and interventions related to elevated BMI percentile diagnoses. A quantitative approach was used to obtain data that is consistent with an observational descriptive design (Stommel & Wills, 2004). A descriptive approach is non-experimental in design and used to understand a phenomenon (Descriptive and Inferential Statistics, 2013). The data collection provided a better understanding of the pediatric overweight and obese population a rural family practice clinic.

The clinic used for this study is located in rural Northwest Ohio. It is staffed by two providers, one physician and one certified family nurse practitioner. A secretary, registered nurse and medical assistant complete the office staff. The clinic is open four days a week with varied hours and one provider per day. The clinic is owned by a local community hospital organization that also has eighteen other providers that offer care to pediatric patients. Of the eighteen providers, seven are in rural settings in outlying offices. This project provided an initial assessment of one of the organization's rural clinics to help identify needs and current interventions related to obesity in the pediatric patients.

A convenience sample was used that included all pediatric patients seen at the clinic from January 1, 2014 through December 31, 2014. Inclusions for the study were male and female patients between the ages of 3-12 years. The age range was limited to identify overweight and obese pediatric patients at an earlier age, thus preventing complications such as diabetes and

hypertension. Children over the age of twelve typically have more freedom to choose their own food intake and less monitoring by parents or caregivers. Each encounter at the clinic, during the specified time was evaluated. Unique patients were not identified as each patient encounter is an opportunity to screen and intervene for overweight patients.

The definition of overweight in the pediatric population is defined as a BMI percentile greater than or equal to the 85<sup>th</sup>-94<sup>th</sup> percentile. Obese is defined as a BMI percentile greater than or equal to the 95<sup>th</sup> percentile (Barlow & Dietz, 1998; CDC, 2014). De-identified information from the chart review included the patient's age, gender and BMI percentile. If the BMI percentile met the criteria for overweight or obese, the chart was further examined to assess if a formal weight related diagnosis was made, and what type of interventions were performed or ordered: (a) discussion of diet, (b) discussion of exercise, (c) handout of patient education on diagnosis, (d) diet or exercise, (e) laboratory testing ordered, (f) referral to endocrinology, (g) referral to dietician/nutrition counseling, (h) referral to lipid clinic. Each intervention was coded with a numerical identifier for the purpose of data collection. The International Classification of Disease (ICD), ninth edition was used to identify diagnoses related to pediatric overweight and obesity. The ICD-9 codes included were ICD-9 278.02, ICD-9 278.00, ICD-9 278.01, ICD-9 783.1, ICD-9 V85.53, and ICD-9 V85.54.

Prior to beginning the chart audit, the project was reviewed by the Ohio State University (OSU) Biomedical Institutional Review Board (IRB) and the Health Insurance Portability and Accountability Act (HIPAA) compliance officer at Wilson Health. This project was not considered research according the OSU IRB Investigator's Guide which states, "a systematic investigation, including development, testing, and evaluation designed to develop or contribute to generalizable knowledge" (The Ohio State University [OSU], 2010, p. 6). Any information

obtained from this project is not intended to lead to generalized to a larger population, above and beyond the staff and leadership of the clinic studied. Information was collected from already existing data in the electronic medical record (EMR). Therefore, this DNP project had an exempt status from the OSU IRB and the HIPAA compliance officer at Wilson Health since there was a very minimal risk to patients (OSU, 2010).

### **Sample**

Data were collected in the EMR in a rural practice in Ohio. All charts of pediatric patients ages 3-12 were reviewed according to a specified data collection tool (Appendix E). Exclusion criteria included patients newborn to 35 months of age, and 13 years of age and older. An exhaustive census sample was used to assist the author to better understand this population. An exhaustive census sample includes all patients meeting criteria for inclusion in the review. The race and ethnicity of the clinic is fairly homogenous with Caucasian reported most frequently within the practice. Most charts indicated that patients and parents declined to indicate race during intake.

In the year 2014, 2,095 patient encounters occurred in the clinic. Three hundred ninety-eight pediatric patient encounters were children aged newborn to 18 years. Pediatric patients from 3-12 years of age yielded 168 patient encounters and all were reviewed. Ideally the data would have been collected by two individuals, equally educated and trained on the EMR. However, due to hospital senior leadership decision, no other individuals were granted access to the clinic's charts other than the author.

### **Methods**

This DNP QI project is retrospective and used previously recorded data. Informed consent was not required. A standardized collection tool and protocol was developed for a

systematic way to review each chart. Since data could not be collected by external individuals, the charts were reviewed twice at two different times and in random order by the same data collector. This was to help ensure accuracy in the final product. The reliability was 100% for the coding on the first occasion compared to the second occasion for each chart.

Reliability and validity of the patient charts can be variable related to several reasons. Many factors could influence the measurement of the height and weight such as: (a) the clinical competence of the recorder, (b) cooperation of patient or family, (c) educational level of the recorder, (d) social factors such as the location of the scale and (e) activity at the time of recording (Aaronson & Burman, 1994). Since the author collected the data, in theory the results could be skewed and therefore not accurately represent the population being studied. Accuracy of the data is affected by both the quality of the original data collection and entry into the chart, as well as the accuracy and reliability of data collection for this project.

Each chart reviewed patient age, gender, height, weight, BMI percentile, formal diagnosis of overweight or obese diagnosis, and any interventions performed or ordered. The collected data was not directly linked to any specific patient. Once the information was obtained and recorded, the spreadsheet was stored on the OSU secured research drive. The author and academic advisor were the only individuals with access to this file.

Discussion occurred with Wilson Health (WH) senior leadership and the physician provider at the clinic in regards to pediatric obesity in the clinic, and surrounding areas. Consideration towards the possibility of individuals viewing this project as criticism or threatening was discussed. The physician provider had given written consent to senior leadership about her willingness to participate as needed in the project and to review the results for quality improvement. The Hawthorne effect ("The Hawthorne Effect," 2008) is not an issue



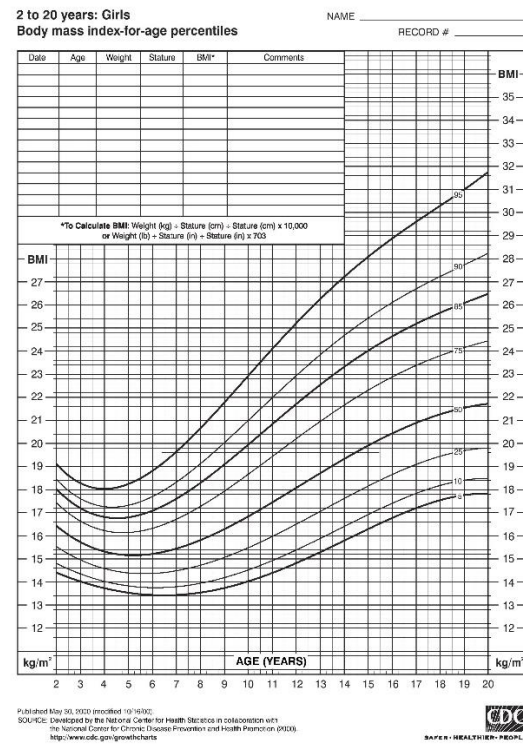
for this project as discussion of this project did not start until 2015, and the chart review was 2014. Provider attitudes and practices on the diagnosis and treatment of pediatric obesity was not the intent of this project, but would certainly require consideration before implementing process changes.

### **Instruments**

The data collection tool was an EXCEL spreadsheet. Each specific variable will allow for better understanding of the pediatric population related to obesity and current clinic practices for treating this disease. The gender of patients was assessed to identify if one gender is affected more than the other. Identification of patient age allowed further description of the clinic's population in order to develop specialized quality improvement projects. Appendix F demonstrates the protocol for data collection and project codebook.

The previously discussed data was in addition to the main data to be collected, which was the BMI percentile. These categories of information were collected as stated and evaluated based on CDC definitions of overweight and obesity. This information allowed the providers in the clinic to gain understanding of the volume of patients that meet the overweight and obese guidelines. Since the data is retrospective, the reliability and validity of the height and weight measurement devices cannot be evaluated. The same scales and height measurement devices were present throughout 2014. However, the need for calibration throughout the year may have caused some slight inaccuracies.

The information collected was easily identifiable in the EMR used at the clinic. Once the chart was accessed, the age and gender are displayed in the top banner. Each day of 2014 was viewed to first identify patients between 3-12 years. Documentation of height and weight was noted, and the BMI percentile range noted also. This calculation is automatically done once the

[illegible]

## Data Analysis Plan

Upon completion of data collection, the information was uploaded to the OSU research drive and shared with the statistician. Descriptive statistics were used to evaluate and explain the findings. This information was compared to current guidelines and recommendations to identify areas for improvement within the clinic. Knowledge gained from this information has also

identified gaps in current identification and treatment of pediatric obese patients.

## Chapter 4

### Results

The purpose of this DNP QI project was to identify the extent of pediatric obesity and overweight and the interventions performed at a rural clinic. The data for the study were gathered from the medical records of children between the ages 3 and 12 visiting a rural family practice between January 1, 2014 and December 31, 2014. All analyses reported were done using SAS version 9.3.

The records from 168 visits of pediatric patients aged 3.00 to 12.92 years (Table 2) were reviewed. Each chart reviewed was a separate encounter, not necessarily a unique patient as some patients presented more than once during 2014. Seven charts did not contain a recorded height and one chart did not have a recorded weight, thus causing the inability to calculate a BMI percentile. Table 3 displays the distribution of BMI percentiles in the population.

**Table 2. Distribution of ages.**

	<i>N</i>	<i>Mean</i>	<i>STD</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>
<i>Age</i>	168	7.57	3.13	7.75	3.00	12.92

Thirty-two percent of the patient encounters had a BMI greater than or equal to the 85<sup>th</sup> percentile, with the larger percentage (17.50%) greater than the 95<sup>th</sup> percentile, or obese category. Slightly more than half of the population (62.50%) had a BMI percentile that was within normal guidelines. Only five percent of pediatric visits (age 3-12) are classified as underweight (Table 3).

A formal diagnosis of overweight or obesity was never recorded for any patient with a BMI percentile greater than or equal to the 85<sup>th</sup> percentile. Incidentally, it was also noted that not only was a diagnosis of overweight or obesity not diagnosed or addressed at the visit, a diagnosis had never been recorded in the patient's EMR (Table 4).

**Table 3. Distribution of BMI percentile data.**

	<i>N</i>	<i>%</i>
<b>BMI Percentile</b>		
<i>BMI less than the 5th percentile</i>	8	5.00
<i>BMI between 5th-84th percentile</i>	100	62.50
<i>BMI percentile between the 85th- 94th</i>	24	15.00
<i>BMI percentile greater than or equal to the 95th percentile</i>	28	17.50
<b>BMI Classification: Low vs. High</b>		
<i>BMI between 0th-84th percentile</i>	108	67.50
<i>BMI between 85th-100th percentile</i>	52	32.50

**Table 4. Distribution of interventions provided related to overweight or obese diagnosis.**

	<i>N</i>	<i>%</i>
<b>Intervention</b>		
<i>No data</i>	127	75.60
<i>Handout of patient education on DX, diet or exercise</i>	40	23.81
<i>Discussion of diet and handout of patient education on DX, diet or exercise</i>	1	0.60

Table five identifies the relationship between age and BMI percentile. The mean age for underweight pediatric visits was 8.49 years, normal BMI percentile at 7.73 years, overweight average 6.34 years, and 8.43 years for obese children. Since the same patient may have visited the clinic more than once in 2014, this data may be skewed since multiple occurrences of the same child will change the average age in that direction. However, this does show that pediatric patients in the clinic are overweight and obese, on average, at the early elementary stage of development. The USPSTF (2009) report that the United States pediatric obesity rate is 17 percent, and this clinic is above national average at 35 percent.

**Table 5. Relationship between age and BMI percentile.**

	Age					
	<i>N</i>	<i>Mean</i>	<i>STD</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>
<i>BMI less than the 5th percentile</i>	8	8.49	3.49	9.17	3.67	12.92
<i>BMI between 5th-84th percentile</i>	100	7.73	3.10	8.00	3.00	12.92
<i>BMI percentile between the 85th- 94th</i>	24	6.34	2.34	7.00	3.17	11.42
<i>BMI percentile greater than or equal to the 95th percentile</i>	28	8.43	3.37	8.29	3.00	12.83

Analysis of the relationship between age, gender and BMI classification demonstrated an interesting finding. In children 3-5 years, the population had a fairly equal proportion of males and females classified as overweight and obese, 35.7% and 32.2% respectively. However, the population of males and females over the age of five that are considered overweight and obese have significant differences with males at 17.8% and females at 57.1%. This possibly indicates that after the age of five, there are factors that are increasing the BMI percentile in females more than males is an area for further exploration. Review of the CDC (2014) pediatric growth charts indicate a sharp upward curve of BMI percentiles around the age of five. This project identified a significant increase in BMI percentiles after age five in females. This may be due to hormonal changes in the female population and the earlier onset of puberty as compared to males (Kaplowitz, 2008). Further study of causative factors would be required to identify physical and environmental factors that may explain this finding.

Although not the focus of this project, a noteworthy finding was related to pediatric patients noted to be underweight according to CDC definition of a BMI percentile less than five percent (2014). Approximately 3.5% of United States children are underweight (CDC, 2014). This closely mimics the findings in this project of five percent of 3-12 year olds classified as underweight. Children deprived of essential vitamins, nutrients and protein are at an increased

risk for cognitive, psychosocial and physical complications (Robert Wood Johnson [RWJF], 2016). Poor nutrition, especially at a young age, compromise brain development. Although this project was to assess overweight and obesity, future quality improvement projects should also address not only elevated BMI percentiles, but to help all patients obtain and maintain a healthy weight.

**Table 6. Relationship between gender, age, and BMI classification.**

		<i>BMI between 0th-84th percentile</i>		<i>BMI between 85th-100th percentile</i>		<i>Overall</i>	
		<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Age Classification</i>							
<i>Male</i>	<i>5 years or less</i>	9	64.3	5	35.7	14	100.0
	<i>Greater than 5</i>	60	82.2	13	17.8	73	100.0
<i>Female</i>	<i>5 years or less</i>	21	67.7	10	32.3	31	100.0
	<i>Greater than 5</i>	18	42.9	24	57.1	42	100.0

## Discussion

Pediatric obesity is a concern throughout the nation. It can lead to numerous negative health outcomes and diseases. Aside from genetic disorders and some chronic medication use, obesity is largely preventable. In order to prevent obesity related complications, early identification of these children is paramount. The AAP (2015) recommends screening for obesity at age two and the UPSTF (2009) recommends screening begin at age six.

The data from the rural clinic clearly identifies a need for a comprehensive approach to pediatric obesity. Thirty-two percent of the 3-12 year olds, who visited the clinic in 2014 were overweight or obese and a diagnosis or intervention never occurred. This is concerning, especially in the female school-age population. Over 50 percent of the female patients over five years old had a BMI percentile of 85th or higher.

Data collected in regard to interventions that are implemented at the clinic will need to be reevaluated after quality improvement has begun related to this topic. The only information given to patients and families related to healthy diet was from pre-populated standard educational informational handouts when a well visit was performed. These same instructions were not given or discussed in relation to an actual weight related diagnosis. The next logical step will be to administer provider surveys to address knowledge of current pediatric obesity recommendations and provider perceptions related to real or potential barriers of screening and treating this population. Other clinics in the health care system that treat pediatric patients should have similar data collected to identify needs in other clinics, along with trends and barriers within the organization and community.



## **Chapter 5**

### **Project Summary**

#### **Limitations**

This DNP QI project focused on pediatric overweight and obesity. The data collected focused on pediatric patients seen in 2014 between the ages of 3-12. The American Academy of Pediatrics (AAP, 2015) recommends screening at age two. The inclusion of the two-year old patients may offer more information to gauge if this clinic should start screening at age two or six as recommended by the USPSTF (2009). All patient visits that met criteria were reviewed in 2014, including duplicates of the same patient. Each unique encounter is an opportunity to address weight concerns. However, the sample used was a convenience sample and may not adequately represent the full population. A random sample of the entire clinic's pediatric patients, ages 2-17, would offer a more representative sample population.

Retrospective chart audits and studies offer a wealth of information. However, there are potential downfalls of this type of design. The data were collected by the author, and therefore allows for the possibility bias or misinformation. Data could be skewed to have the results indicate a certain intention of the author. However, the risk for bias in this study is low, as the data was checked twice in different orders, and could easily be verified as it is part of a permanent record that cannot be altered. Retrospective project designs are prone to misclassification. Even though the author developed the classification codebook and protocol, there is still the possibility of mistyping or coding information extracted from the chart. This type of study can also have confounding variables that may have altered the collected data and such variables are not currently known. Data analyzed by descriptive statistics offers raw data and basic understandings of the information. This method cannot determine causation, only

associations and one must be careful not to assume significant correlations or causation.

Policy development for pediatric overweight and obesity is not limited to clinic and organizational policy. The community in which this clinic resides is lacking recreational facilities that encourage physical activity in children and families. A park and swimming pool are available, but only seasonally and the cost of pool membership may not be financially feasible for all. Indoor school facilities are only available for organized sports and extracurricular activities sponsored by the school and approved community groups. This community also lacks a recreational facility that is open to the public. Partnership between the schools, county commissioners, and local health care organizations can develop policies that allow children and families access to local schools year-round. Collaboration of all stakeholders can identify ways to improve access to fresh food and safe recreational areas that are available to all socioeconomic populations.

The organization's mission is to promote wellness throughout the community so that people can spend more time doing what they love, with those they love. One way to achieve this mission is to promote health among children and families. Through program development within the organization, community, schools, churches, and businesses, families can be healthier and more productive. A culture of wellness should be the goal instead of reactive health care. Partnerships with tertiary pediatric centers could offer resources and collaboration for rural providers to prevent and treat patients in setting close to home.

### **Methods of Dissemination**

This DNP Final Project was approved as a quality improvement project and therefore cannot be disseminated as generalizable knowledge. Per the agreement between Wilson Health and the author, findings were shared with clinic staff and senior leadership. The Vice President

of Process Excellence may be key to further exploration of this issue at the clinic and other clinics within the organization. As part of the OSU DNP requirements, project outcomes were shared in an open forum and in defense with the project committee.

Findings were shared with the clinic provider and staff at during a regular office meeting to increase awareness of the need for appropriate screenings and recommended interventions according to expert recommendations and guidelines. Previous quality improvement projects have been well received when all members of the clinic had input into the problem and resolution. All staff at the rural clinic must be active participants to increase buy-in and compliance with quality improvement initiatives. Provider attitudes and current practices associated with pediatric obesity should be assessed to help determine barriers to process improvement changes.

Once a process has been identified for an appropriate screening process, a protocol can be developed for the clinic. Use of the EMR should also be optimized to standardize care with alerts and prompts to notify providers of missing data and when BMI percentiles are classified as the 85<sup>th</sup> percentile and higher. Since data for one rural clinic has been obtained, it may be used as a pilot office for increasing the number of children screened and formally diagnosed. It is not enough to simply diagnose a patient with a weight disorder, interventions must commence and monitored. More data should be collected from other organizational clinics to assess pediatric obesity issues and barriers before widespread adoption of one screening tool. The ideal screening tool should be based on expert recommendations and guidelines and used consistently. Data would then be disseminated throughout the organization through email, and medical staff meetings. The organization would then have data and screening protocols to further assess needs in the community for specialty centers and programs to improve the health of pediatric

overweight and obesity population.

### **Conclusion**

The rural clinic studied has many opportunities to improve pediatric care related to overweight and obesity. It is evident from the data that there is a significant population requiring attention. In order for interventions to be implemented, these individuals must be identified as early as possible. Children as young as three were identified as overweight and obese. If the AAP guidelines for screening were followed, these children could have been identified during their visit in 2014, or possibly earlier. As with other chronic conditions, screening tools should be developed along with staff and provider education on the current recommendations. This should include an alert in the EMR when a BMI is greater than or equal to the 85<sup>th</sup> percentile, thus prompting the provider to investigate further and intervene as needed.

Since this clinic and several others within the health care system are in rural areas, resources in the community and neighboring areas should be evaluated so providers can refer as needed. Often transportation to specialists and appointments outside of the immediate geographic location are difficult for families for financial reasons and lack of public transportation. If other clinics in the area are experiencing the same concerns with the pediatric population, a community needs and feasibility assessment should occur so that services can be offered locally.

This author identified a need in the rural clinic, organization, and community. The recently updated mission of the healthcare organization focuses on prevention and wellness. The need to improve screening of pediatric patients for obesity, and improving access to required treatments and qualified providers is in-line with the updated mission. Prevention and treatment of pediatric overweight and obesity can potentially reduce health care costs if obesity related

conditions are prevented. Evidence-based guidelines for screening, prevention and treatment of obesity should be the basis of a treatment protocol.

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## Appendix A

The Ohio State University-College of Nursing

**Human Subjects Research Assessment Form****Instructions:**

1. Please complete the requested project information, as this form may be used for documentation that neither IRB review nor an exemption is required.
2. Please select the appropriate answers to each question in order as they appear. If all of the questions are answered without receiving an error message, the form must be printed AND signed as certification that the project is "not human subjects research," and does not require IRB review or exemption. If you are unsure how to answer any of the questions, please contact ORRP for additional guidance.

**Project Information:**

Name of PI, advisor, or mentor:

Dr. Margaret Graham

Title of Project

Retrospective Chart Audit of a Rural Family Practice to Identify Pediatric Obesity and Current Intervention for Quality Improvement

Brief Description of Project/Goals:

The purpose of this DNP project is to identify the actual number of pediatric patients aged 3-12 in a rural Ohio clinic that have elevated BMI percentiles and specific interventions that address elevated BMI percentiles. Through a retrospective chart, the author will identify the rate of identification and documentation of pediatric patients that meet the criteria for overweight and obesity. The author will also identify what interventions, if any are implemented when a diagnosis related to an elevated BMI percentile has been identified. The collected data will allow the clinic to increase awareness of the need for accurate height and weight measurements to increase identification of children 3-12 years with overweight and obesity.

Help

**Questions:**

1. Will the project involve testing an experimental drug, device (including medical software or assays), or biologic?

☐ Yes☒ No

Help

2. Has the project received funding (e.g. federal, industry) to be conducted as a human subjects research study?

☐ Yes☒ No

Help

3. In addition to any other purposes, is the project intended to develop or contribute to generalizable knowledge (e.g. testing a hypothesis) AND/OR has the project been designed in such a way that the findings will be generalizable (e.g. randomization of subjects; comparison of case vs. control)?

☐ Yes☒ No

Help

4. Will the results of the project be published, presented or disseminated outside of the institution conducting it?

☐ Yes☒ No

Help

If no message appears above indicating the certification is not valid, IRB Review is not required because, in accordance with federal regulations, the project does not constitute human subjects research as defined under 45 CFR 46.102(d). Print a copy of this form, have it signed by the PI, advisor, or mentor, and save with your files. This serves as record that IRB review is not required for this project.

What do my results mean?

Signature

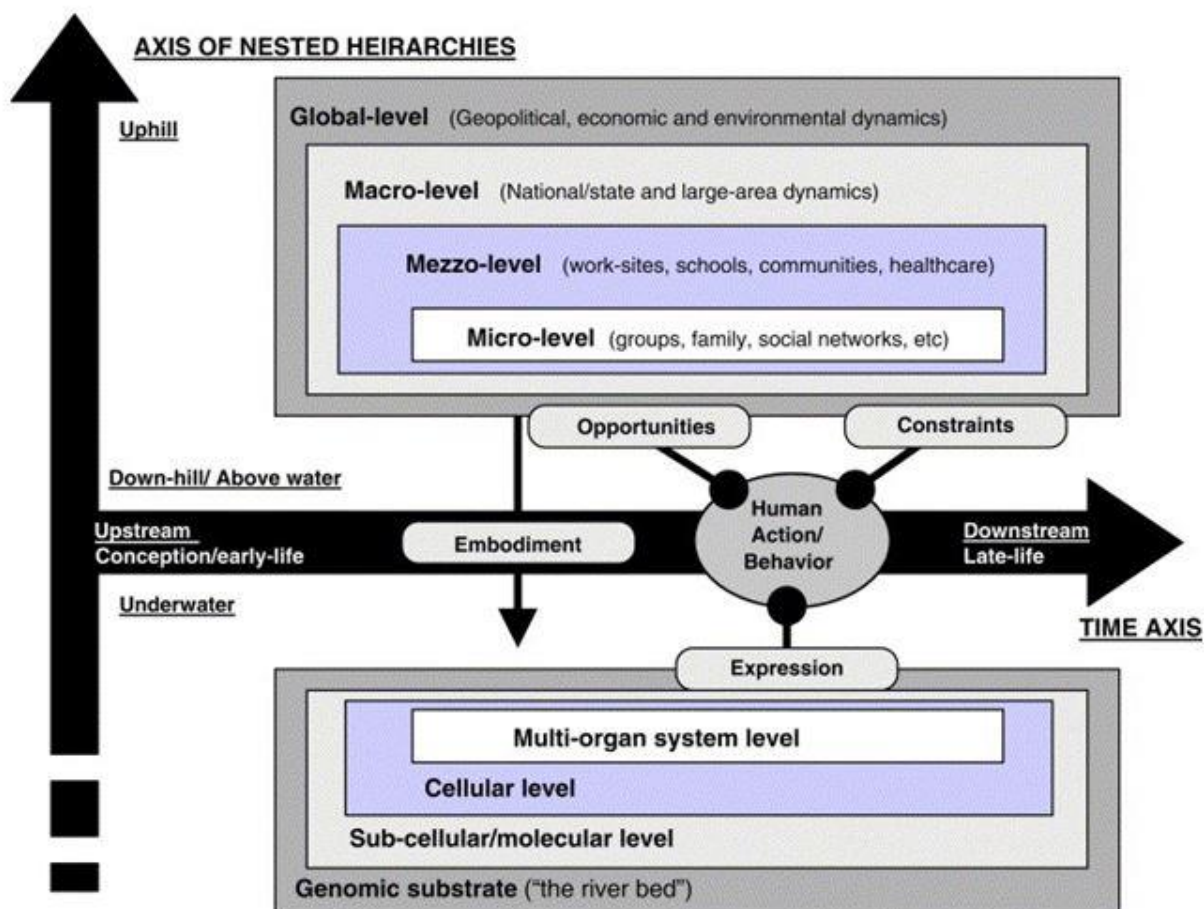
Margaret Claire Graham

Current Date

11/29/15

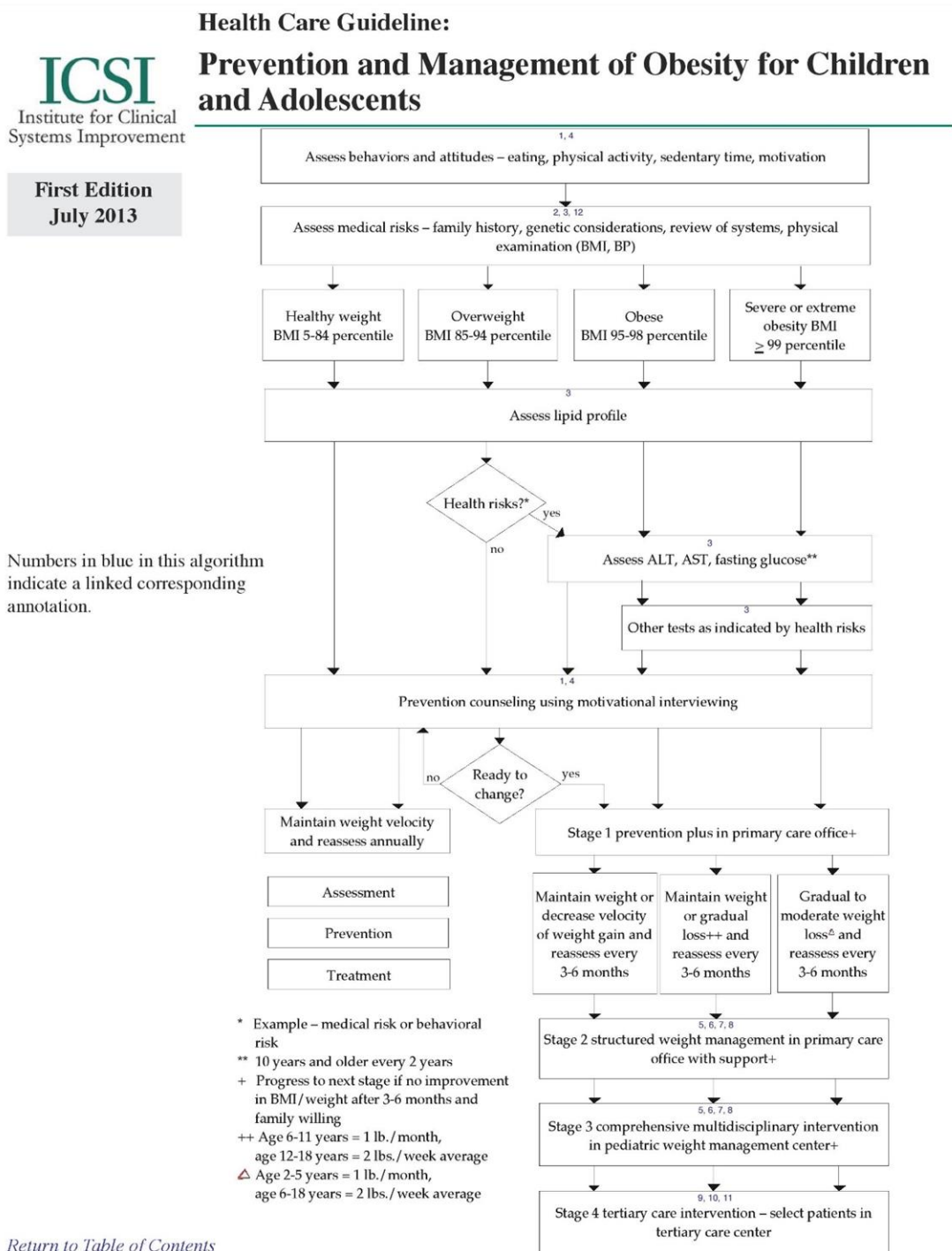
Print Form

## Appendix B



Glass and McAtee, 2006

## Appendix C



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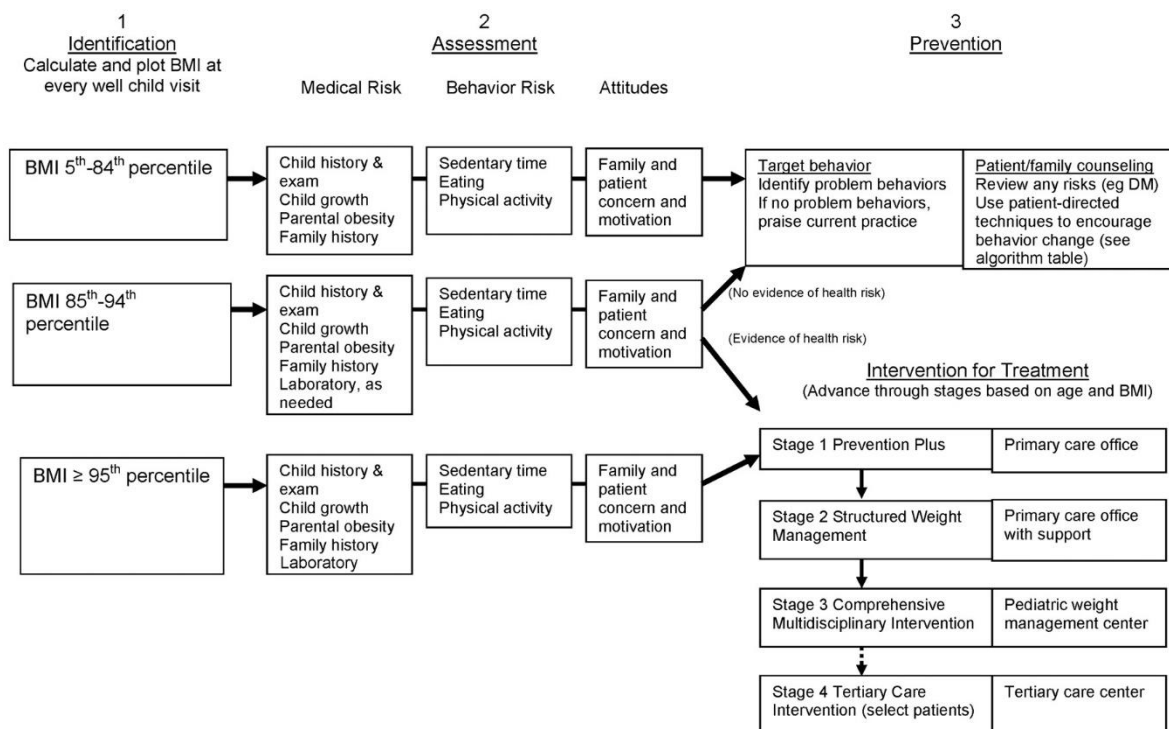
\* Adapted from the National Initiative for Children's Health Care Quality (NICHQ)

[www.icsi.org](http://www.icsi.org)

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## Appendix D



## Appendix E

Age	Gender	HT	WT	BMIP	FORDX	INTER

Example EXCEL spreadsheet for documentation of extracted data.



**Codebook for data collection**

Variable Name	Column Position	Variable Description	Value Codes and Labels
ID	A	Study Participant ID	Value 1-188
GENDER	C	Gender of pediatric patient	Male (1) Female (2) Missing data (0)
AGE	B	Age of patient in years.month	Value 3-12
HT	D	Height recorded (inches or cm)	yes (1) no (2)
WT	E	Weight recorded (lb or kg)	yes (1) no (2)
BMIP	F	BMI Percentile	BMI less than the 5th percentile (0) BMI between 5th-84th percentile (1) BMI percentile between the 85th- 94th (2) BMI percentile greater than or equal to the 95th percentile (3) BMI data missing (9)
FORDX	G	Formal diagnosis made related to overweight and obesity	ICD-9 278.02 (1) ICD-9 278.00 (2) ICD-9 278.01 (3) ICD-9 783.1 (4) ICD-9 V85.53 (5) ICD-9 V85.54 (6) Missing data (0)
INTER		Interventions provided related to overweight or obese diagnosis	Discussion of diet (1) Discussion of exercise (2) Handout of patient education on DX, diet or exercise (3) Laboratory testing ordered (4) Referral to endocrinology (5) Referral to dietician/nutrition counseling (6) Referral to lipid clinic (7) Other (8) Missing data (0)

Appendix F

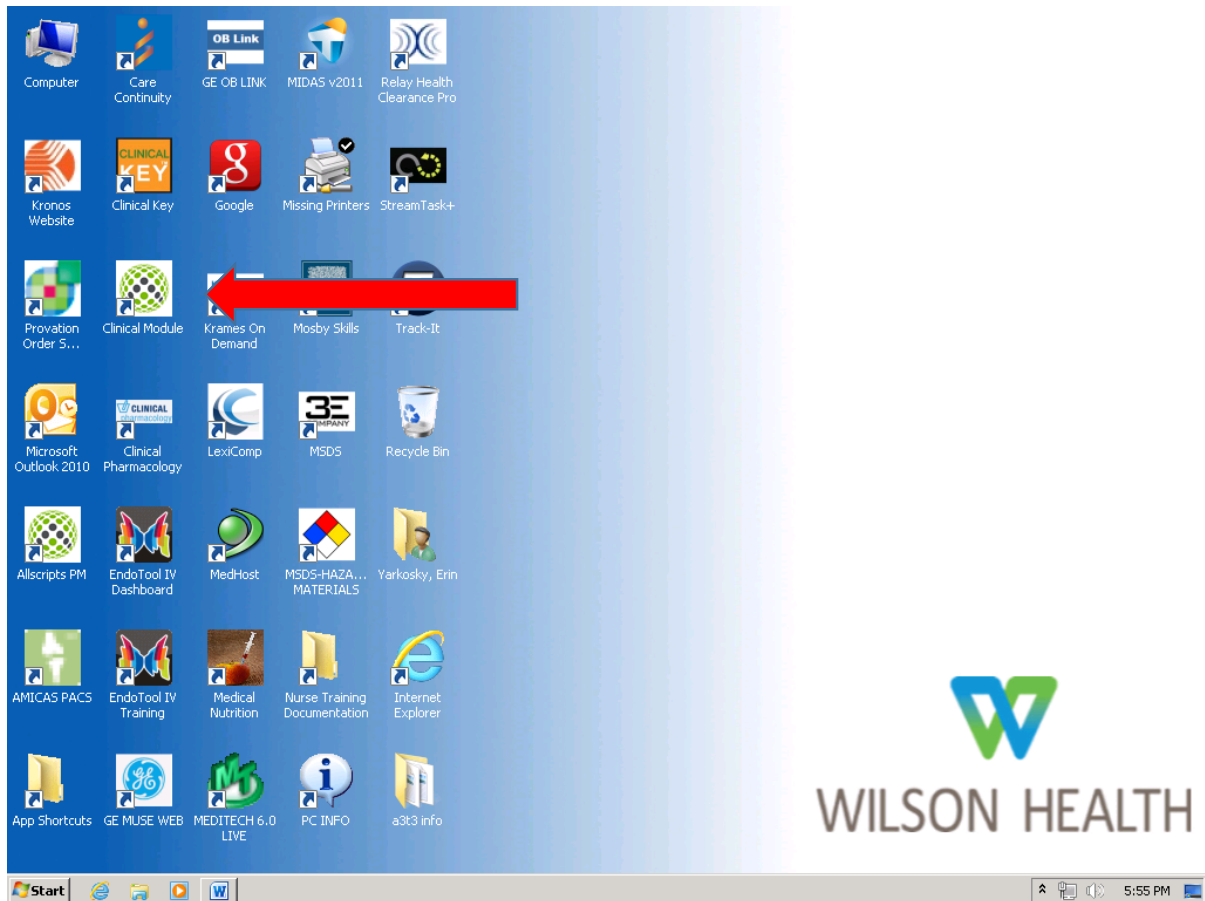
Pediatric Obesity Data Collection Instruction

The following protocol is to be used precisely for data collection. Each step must be completed in order to ensure accuracy. Test patients will be assigned prior to actual data collection to allow time for practice.

Due to the Health Insurance Portability and Accountability Act of 1996, individuals other than the assigned data collectors and DNP student are not allowed to access charts related to this project. Discussion about individual charts is not to be discussed with the other data collector. Any questions should be directed to the DNP student. All collected data is to be saved to the YarkoskyDNP folder on the desktop and emailed after each session to yarkosky.1@osu.edu.

To begin, you must use a computer station located in the hospital or Wilson Health Medical Group office.

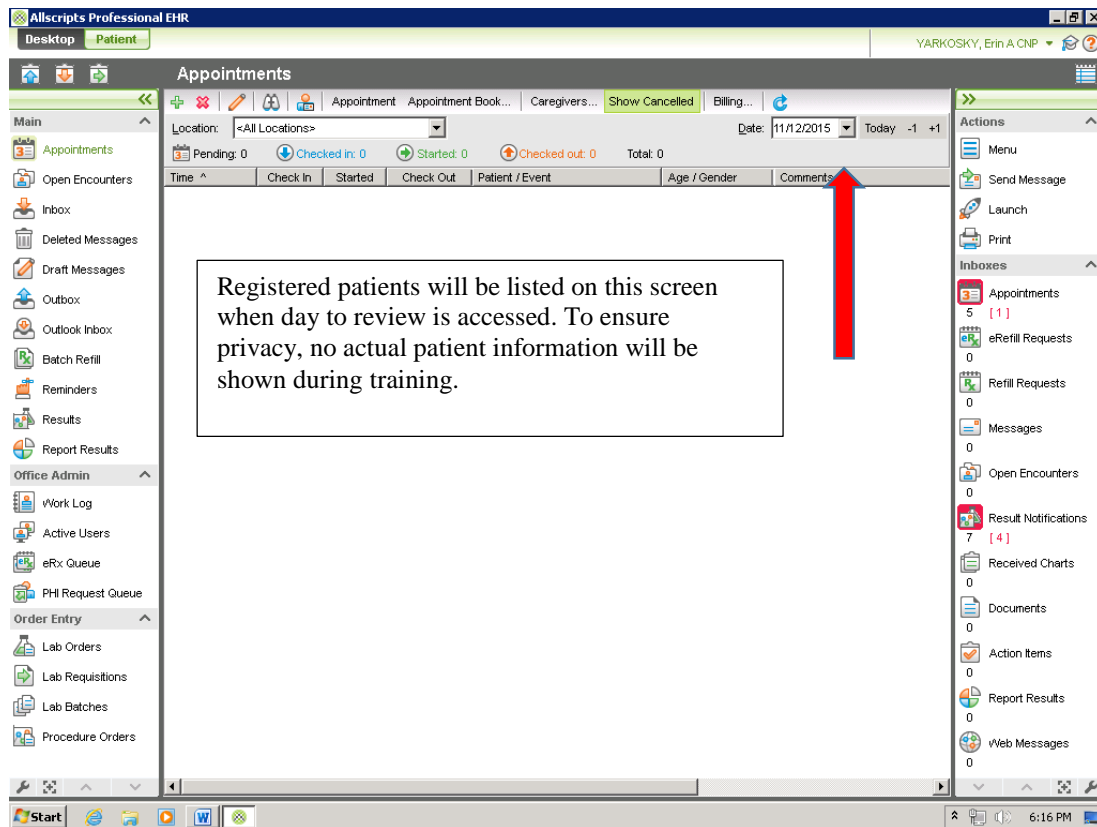
1. If not already on, turn on computer monitor. The tower (main computer on/off switch) should already be on. If not, turn on main power switch (will vary between computers).
2. Log on to the computer with your normal username and password.
3. Click the *Clinical Module* icon to start Allscripts.



4. Login in to Allscripts Professional EHR with your normal Username and Password.



5. Use the calendar given to identify the dates that are to be reviewed. All dates that patients were seen in 2014 have been listed at the end of this packet.
6. Click on the down arrow by the date (red arrow below) to select the date for review.



7. The homescreen at this point will look slightly different but will include patient times in clinic, name, gender, age in years and months, date of birth, reason for visit. However, the layout will be similar.
8. Search down each patient to find pediatric patients with the ages of 3 years and 0 months through 12 years and 11 months.
9. Each patient should be listed in numerical order beginning with number 1 under column A (variable ID). Identify the age in years and months and record in the EXCEL spreadsheet column B, variable name AGE as noted in the codebook.
10. Do the same for the gender (EXCEL label GENDER, column C).
11. Double click the patient name that is to be reviewed.

**Patient Search**

Last Name: test Date of Birth: Search Add...  
 First Name: Phone: Clear  
 Patient #: Address: Recent  
 SSN (last 4 digits): ☐ Search Training Patients

Search Results:

Last Name ^	First Name	Patient #	SSN	Gender	Date of Birth	Phone	Address	Last Access
test	boy	AEEASE		Male	9/3/2007			11/11/2015 10:42 AM
Test	Ab Pain	AB		Male	1/31/1975			10/27/2015 10:14 AM
test	abby baby	98765		Female	1/1/2014			11/2/2015 12:22 PM
Test	Abby Baby	086421		Female	1/1/2008			11/6/2015 1:20 PM
Test	Abby Baby	909090		Female	1/1/2001			9/29/2015 2:03 PM
Test	AE	AE		Female	7/7/1984			11/10/2015 10:17 AM
Test	Allan	ALLANTEST		Male	11/18/1927			11/6/2015 2:04 PM
Test	Amy M.	112120384	6789	Female	11/12/1974			10/8/2015 10:16 AM
Test	Andrew	08080808		Male	12/8/1977			10/14/2015 7:45 AM
TEST	BABY	IUVUOYF		Female	9/22/2014			7/31/2015 10:20 AM
TEST	BABY BOY	A;LDJOE		Male	12/13/2002			9/30/2015 4:08 PM
Test	Baby Smith	*001		Male	9/20/2014			11/9/2015 2:58 PM
Test	Baby Smith	*002		Female	9/20/2014			7/15/2015 2:12 PM
Test	Barb	123457		Female	4/11/2004	(555) 123-6789	555 Healthmatics Lane	11/3/2015 4:38 PM
Test	Becky L.	124654		Female	7/18/1974			9/14/2015 2:03 PM
Test	Belinda	269521063	1063	Female	10/31/1951			10/30/2015 10:07 AM
test	Belinda	00000	6789	Female	10/31/1951			10/28/2015 8:42 AM
Test	Bella	56565656		Female	3/20/1977			10/1/2015 3:14 PM
Test	Bob	YRUA		Male	10/10/2000			11/3/2015 4:44 PM
Test	Bobby	BB		Female	11/15/1955			11/11/2015 9:00 AM
Test	Brandi	246810		Female	4/19/1987			10/19/2015 3:47 PM
Test	Brian	2548431		Female	1/1/1955			11/3/2015 5:39 PM
test	Carol	CTEST		Female	9/15/1979			10/14/2015 9:56 AM
Test	Chancey	222222		Female	1/17/1975			9/10/2015 3:16 PM
Test	Chandra	990404		Female	1/2/1969			9/25/2015 9:36 AM
Test	Chest Pain	CP		Female	1/31/1974			10/1/2015 9:55 AM
Test	Chris	CHRISTEST		Male	9/20/2008	(888) 672-2433	5501 Dillard Dr	6/26/2015 10:03 AM
Test	Cindy	268762942	2942	Female	5/5/1973			1/13/2015 4:31 PM
TEST	COURTNEY	COURTNF		Female	10/22/1980			2/9/2015 10:13 PM

OK Cancel

12. A reminder or alert box will most likely pop-up after clicking a patient name. Disregard this message and you may click the red "x" in the top right corner to proceed.
13. At this point the face sheet will be displayed.

14. DO NOT record the age in banner at the top of the screen as this will be the current age as of the date of the chart review.

The screenshot displays the Allscripts Professional EHR interface for a patient named 'TEST, elementary boy' (DOB: 6/1/2004, 11y 5m Male). The interface is divided into several sections:

- Header:** Patient name, date of birth, gender, insurance carrier, and provider information (YARKOSKY, Erin A. CNP).
- Face Sheet:** A summary of patient information including status (Active | Training Patient), insurance plan (Undefined), allergies (None documented), risk (None Documented), guarantor (Self), and marital status (Undefined).
- Medical History:** A list of medical conditions, including 'Problem List/Past Medical', 'Allergy', 'Immunization', 'Family', 'Social', 'Travel', 'Pregnancy/Birth', 'Past Surgical', 'Diagnostic Studies', 'Health Maintenance', 'Impairments', and 'Other Past History'. The 'Other Past History' section lists 'Unspecified Diagnosis', 'CONTACT WITH OR EXPOSURE TO COMMUNICABLE DIS', 'Unspecified Diagnosis', 'Unspecified Diagnosis', 'DOWN'S SYNDROME (758.0) 1mo', 'Unspecified Diagnosis', and 'Unspecified Diagnosis'.
- Encounters:** A list of encounters by date, including 'Today' (11/11/2015), 'More Than a Year Ago' (10/20/2009), and 'Patient Message - Free text mess' (4/30/2009).
- Medications:** A list of medications, including 'Current Medications' (Acetaminophen 160MG/5ML Suspension every four hours, as), 'Administered Medications', and 'Previous Medications' (Fluticasone Propionate 50MCG/ACT, 2 (two) squirts each no).
- Orders:** A list of orders, including 'More Than a Year Ago' (4/22/2009), 'Vitamins: minerals [Ordered]', 'Vitamins: supplements [Ordered]', 'Vitamins: minerals [Ordered]', 'Vitamins: daily recommended intake [Ordered]', 'Vitamins: supplements [Ordered]', 'Vitamins: daily recommended intake [Ordered]', '10/21/2008: MENINGOCOCCAL VACC, SUBCUTANEOUS (S', and '10/21/2008: IMMUNIZ ADMININ 1 VAC. SNGI UCOMRO (R04'.

A red arrow points to the patient's age in the banner, indicating that this age should not be recorded in the chart review.

15. Click the Vitals tab and locate the date for review. You may have to scroll up or down to find the correct date

The screenshot displays the Allscripts Professional EHR interface for a patient named TEST, elementary boy, born 6/1/2004. The interface is divided into several sections:

- Header:** Patient information including name, date of birth, gender, insurance carrier, and provider (YARKOSKY, Erin A, CNP).
- Face Sheet:** A summary of patient data including status (Active), training status, insurance plan, allergies, guarantor, marital status, and blood type.
- Medical History:** A list of medical conditions, including "Problem List/Past Medical", "Allergy", "Immunization", "Family", "Social", "Travel", "Pregnancy/Birth", "Past Surgical", "Diagnostic Studies", "Health Maintenance", "Impairments", and "Other Past History". A red arrow points to the "Vitals" tab in the left sidebar.
- Encounters:** A list of encounters by date, including "Today", "11/11/2015: [Open Encounter] - (Erin A Yarkosky, CNP)", and "More Than a Year Ago".
- Medications:** A list of medications, including "Current Medications", "Administered Medications", and "Previous Medications".
- Orders:** A list of orders, including "More Than a Year Ago", "4/22/2009: Vitamins: minerals [Ordered]", "4/22/2009: Vitamins: supplements [Ordered]", "4/22/2009: Vitamins: minerals [Ordered]", "4/22/2009: Vitamins: daily recommended intake [Ordered]", "4/22/2009: Vitamins: supplements [Ordered]", "4/22/2009: Vitamins: daily recommended intake [Ordered]", "10/21/2008: MENINGOCOCCAL VACC, SUBCUTANEOUS (S", and "10/21/2008: IMMUNIZ ADMIN 1 VAC. SING COMBO (304".
- Right Sidebar:** A list of actions and inboxes, including "Menu", "Send Message", "Launch", "Print", "Inboxes", "Appointments", "eRefill Requests", "Refill Requests", "Messages", "Open Encounters", "Result Notifications", "Received Charts", "Documents", "Action Items", and "Report Results".

The "Vitals" tab is highlighted in the left sidebar, and a red arrow points to it. The "Vitals" section is currently empty.



16. Look to see if a height and weight were performed on the date that is being reviewed.  
Under the EXCEL label HT (column D), document 1 if recorded and 0 if not recorded.
17. Do the same for the weight. Under the EXCEL label WT (column E), record a 0 if not recorded and a 1 if it was recorded.
18. If either a height or weight record is missing, you may stop the chart review for this patient. At this time, you may file the chart by clicking the red down arrow (as indicated by the blue arrow below). Then click on “Desktop” to return to the patient list for that day (as indicated by the green arrow). On the EXCEL spreadsheet, place the number 9 in the rest of the cells for that patient. Return to step #8.
19. If BOTH height and weight were recorded, proceed to click on the Growth Charts, as indicated by the red arrow below.

**Allscripts Professional EHR**

Desktop Patient **TEST elementary boy** 6/1/2004 | 11y 5m Male | Insurance Carrier Unknown | #ELEB | YARKOSKY, Erin A CNP

Status: Active | Training Patient  
Usual: Manager, System  
Ref: -

Ins. Plan: Undefined  
Allergies: None documented  
Risk: None Documented

Guarantor: Self  
No Web Account

Marital Status: Undefined  
Blood Type: (no entry)

**Vitals**

Date	Temp.	Pulse	Resp.	Peak Flow ^	P. OX	BP	Weight	Height	Waist	Neck
11/11/2015	98.4° F	89	24	100%	90/42	90 lb	45 in			

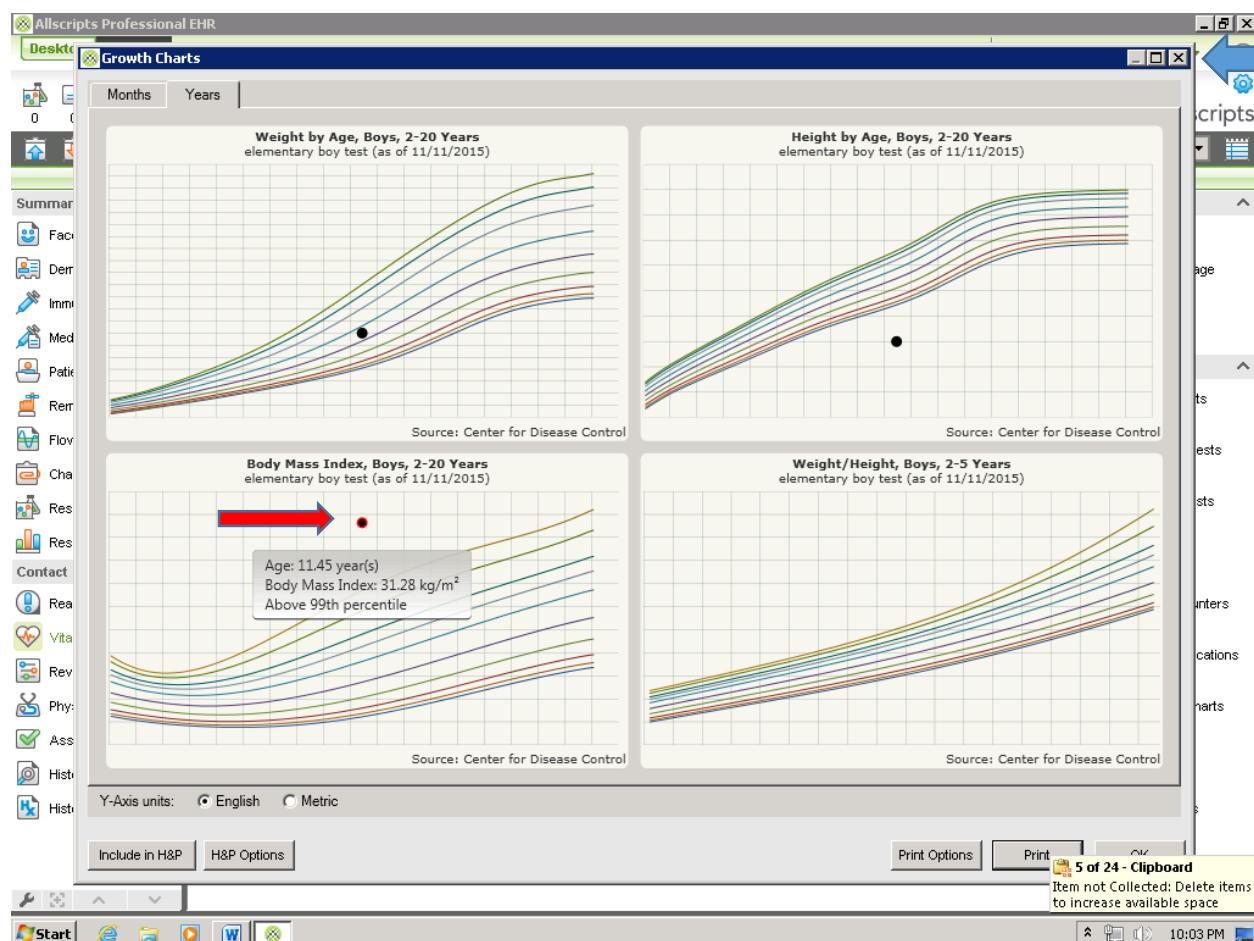
**11/11/2015 9:53 PM**

**Weight:** 90 lb (40.82 kg) **Body Surface Area:** 1.14 m<sup>2</sup>  
**Height:** 45 in (114.3 cm) **Body Mass Index:** 31.25 kg/m<sup>2</sup>  
**Temperature:** 98.4° F (Tympanic) **Blood Pressure:** 90/42 (Sitting, Left Arm, Standard)  
**Pulse:** 89 (Regular) **Pain Level:** 0/10  
**Respiration:** 24 (Unlabored)  
**Pulse Ox:** 100% (Room air)

**Actions**

- Menu
- Send Message
- Launch
- Print
- Inboxes
- Appointments: 0
- eRefill Requests: 0
- Refill Requests: 0
- Messages: 0
- Open Encounters: 1
- Result Notifications: 7 [4]
- Received Charts: 0
- Documents: 0
- Action Items: 0
- Report Results: 0

20. The growth charts will be displayed as seen below. Hover over the black dot for the date that is being reviewed. When more than one date is charted, the date will also be listed in the pop-up box. To verify you have the correct date, the age in years and months will also be displayed in the same box.
21. Identify the BMI percentile as listed in the pop-up box. Record on the EXCEL spreadsheet cell BMIP (column F) accordingly. If the BMI is under the 5<sup>th</sup> percentile place a 0 (zero) in the cell. If it is between the 5<sup>th</sup> and 84<sup>th</sup> percentile, place a 1 in the cell. If it is between the 85<sup>th</sup> and 94<sup>th</sup> percentile, place a 2 the cell. If is at or above the 95<sup>th</sup> percentile, place a 3 in the cell. When finished, click the “x” in the top right corner of the growth chart screen as indicated by the blue arrow.



22. Return to the patient's Face Sheet (noted with red arrow).
23. Click the blue cog wheel (green arrow) to sort encounters by date. Search for the date that is being reviewed and double click that encounter. The title of the encounter will be listed as "Office Visit."

The screenshot displays the Allscripts Professional EHR interface for a patient named TEST, elementary boy. The top navigation bar shows the patient's status as Active | Training Patient, with various insurance and guarantor details. The main content area is divided into three sections: Medical History (Newest to oldest), Encounters (By Date, Newest to Oldest), and Medications (All, Newest to Oldest). The Medical History section lists various conditions, including Allergy, Immunization, Family, Social, Travel, Pregnancy/Birth, Past Surgical, Diagnostic Studies, Health Maintenance, Impairments, and Other Past History. The Encounters section lists several encounters, including a recent one on 11/11/2015 and several from 2009. The Medications section lists current and previous medications, including Acetaminophen and Fluticasone. A red arrow points to the Face Sheet tab in the left sidebar, and a green arrow points to the cog wheel icon in the Encounters section, indicating the sorting function. The bottom status bar shows the time as 10:06 PM.

24. Scroll down until you see the section heading “Assessment & Plan” (red arrow).
25. Diagnoses for that encounter will be listed in this section in bold print. Identify if any diagnosis was made for the following ICD-9 codes: ICD-9 278.02, ICD-9 278.00, ICD-9 278.01, ICD-9 783.1, ICD-9 V85.53, ICD-9 V85.5. Utilizing the corresponding code listed in the code book, complete column g (variable FORDX) accordingly.
26. Next, if one of the above diagnoses were listed, evaluate any interventions that were completed. As noted by the green arrow, education related to diet or exercise would be listed as shown. Under the diagnosis ICD-9 V85.54, if a referral was made related to this elevated BMI percentile, it will be listed as indicated by the yellow arrow below. If any laboratory orders were made related to this diagnoses, it will be listed as indicated by the blue arrow. At the end of each diagnosis, additional information may be hand typed and will be noted in the area of the orange arrow. Code column H (variable INTER) according to the numbers in the code book.
27. Before leaving this screen, scroll past the provider’s signature, as addendums may be attached that could include diagnoses and interventions added after the chart was closed for that particular visit.

TEST, elementary boy | 6/1/2004 | 11y 5m Male | Insurance Carrier Unknown | #ELEB

Status: Active | Training Patient  
Usual: Manager, System  
Ref: -

Ins. Plan: Undefined  
Allergies: No Known Drug Allergies  
Risk: None Documented

Guarantor: Self  
No Web Account

Marital Status: Undefined  
Blood Type: (no entry)

Face Sheet | Patient Manager | Medical History | **Encounters** | Medications | Orders | Care Plans & Goals

**Encounters: By Date, Newest to Oldest**

- Today
  - 11/11/2015: [Open Encounter] - (Erin A Yarko)
  - 11/11/2015: Office Visit - Encounter for routine
- More Than a Year Ago
  - 10/20/2009: Patient Message - Free text mess
  - 4/30/2009: Annotation/Addendum - (Frederick
  - 4/22/2009: Office Visit - Unspecified Diagnosis
  - 2/17/2009: Patient Message - Re: Called pt reg
  - 2/17/2009: Patient Message - Called pt regardi
  - 2/17/2009: Patient Message - her ya
  - 12/17/2008: Office Visit - (Mark T Haldeman, M
  - 12/16/2008: Office Visit - (Karen Smith, MD)
  - 10/23/2008: Historical Summary - (Crystal Trin
  - 10/21/2008: Nurse Visit II - CONTACT WITH OF
  - 9/11/2008: Historical Summary - Unspecified D
  - 8/4/2008: Office Visit - Unspecified Diagnosis
  - 7/31/2008: Office Visit - Unspecified Diagnosis
  - 7/30/2008: Office Visit - DOWNNS SYNDROME
  - 7/29/2008: Office Visit - Unspecified Diagnosis
  - 7/24/2008: Office Visit - (Karen Smith, MD)
  - 7/24/2008: Annotation/Addendum - Unspecifi
  - 7/23/2008: Office Visit - (Karen Smith, MD)
  - 7/16/2008: Labs - Urine Cytology (Beverly Sex
  - 10/16/2007: Progress Notes (Beverly Sexton)

**Encounter Details**

Expand View | Outlook Email... | Rebill

History & Physical Report | Labs / Procedures | Billing Information

Notes: Find:

**Global Assessment**  
Examination of related systems reveals - no generalized swelling or edema of extremities and normal coordination.

**Spine/Ribs/Neck**  
**Cervical Spine:** Examination of the cervical spine reveals - no tenderness to palpation, no pain, no swelling, edema or erythema and no known fractures or deformities.

**Thoracic (Dorsal) Spine:** Examination of the thoracic spine reveals - no tenderness over thoracic vertebrae, no pain, no swelling, edema or erythema of surrounding tissue and no known fractures or deformities.

**Lumbosacral Spine:** Examination of the lumbosacral spine reveals - no tenderness to palpation, no pain, normal strength and range, no laxity or crepitus and no known fractures or deformities.

**Assessment & Plan** (Erin A Yarkosky, CNP; 11/11/2015 10:15 PM)  
**Encounter for routine child health examination without abnormal findings (V20.2 | Z00.129)**

**Current Plans**

- Pt Education - Well child visit: year 5
- Pt Education - Diet: healthy - for children
- Pt Education - Tooth decay: prevention
- Pt Education - Safety: poisoning
- Pt Education - Safety: smoke, heat, and carbon monoxide detectors
- Pt Education - Safety: hot water heater setting
- Pt Education - Car safety seat: children over 1 year old
- SCREENING VISUAL ACUITY, QUAN BILAT (99173)

**Pediatric body mass index (BMI) of greater than or equal to 95th percentile for age (V85.54 | Z68.54)**

**Current Plans**

- Referred to Dietician, . (Dietician/Health Nutritionist).
- TSH WITH REFLEX FT4

Signed electronically by Erin A Yarkosky, CNP (11/11/2015 10:15 PM)

28. Next review chart entries after the reviewed date, until you come to another “Office Visit” encounter. For example, patient messages, physician orders and annotation/addendums. These entries may include diagnoses and/or interventions related to an elevated BMI percentile and should be noted in the EXCEL spreadsheet (column F). Make sure that any entry reviewed is in 2014 as some patients may not return for over a year.

**Allscripts Professional EHR**

Desktop

TEST, elementary boy | 6/1/2004 | 11y 5m Male | Insurance Carrier Unknown | #ELEB

Status: Active | Training Patient  
Usual: Manager, System  
Ref: -

Ins. Plan: Undefined  
Allergies: No Known Drug Allergies  
Risk: None Documented

Face Sheet | Patient Manager | Medical History | Encounters | Medications | Orders | Care Plans & Goals

**Encounters: By Date, Newest to Oldest**

- Yesterday
  - 11/11/2015: [Open Encounter] - (Erin A Yarkosky)
  - 11/11/2015: Office Visit - Encounter for routine
- More Than a Year Ago
  - 10/10/2009: Patient Message - Free text mess
  - 4/30/2009: Annotation/Addendum - (Frederick
  - 4/27/2009: Office Visit - Unspecified Diagnosis
  - 2/17/2009: Patient Message - Re: Called pt reg
  - 2/17/2009: Patient Message - Called pt regardi
  - 2/17/2009: Patient Message - her ya
  - 12/17/2008: Office Visit - (Mark T Haldeman, I
  - 12/16/2008: Office Visit - (Karen Smith, MD)
  - 10/23/2008: Historical Summary - (Crystal Trir
  - 10/21/2008: Nurse Visit II - CONTACT WITH OF
  - 9/11/2008: Historical Summary - Unspecified D
  - 8/4/2008: Office Visit - Unspecified Diagnosis
  - 7/31/2008: Office Visit - Unspecified Diagnosis
  - 7/30/2008: Office Visit - DOWN'S SYNDROME
  - 7/29/2008: Office Visit - Unspecified Diagnosis
  - 7/24/2008: Office Visit - (Karen Smith, MD)
  - 7/24/2008: Annotation/Addendum - Unspecifi
  - 7/23/2008: Office Visit - (Karen Smith, MD)
  - 7/16/2008: Labs - Urine Cytology (Beverly Sex
  - 10/16/2007: Progress Notes (Beverly Sexton)

**Encounter Details**

Expand View | Outlook Email... | Rebill

History & Physical Report | Labs / Procedures | Billing Informat

Notes: Find:

**elementary boy test**  
11/11/2015 6:27 PM  
Location: Wilson Urgent Care  
Patient #: ELEB  
DOB: 6/1/2004  
Undefined / Language: Undefined / Race: Undefined Male

**History of Present Illness** (Erin A Yarkosky, CNP; 11/11/2015 6:27 PM)  
The patient is a 11 year, 5 month old male who p  
visit. The primary caregiver is the mother and father. Fa  
supplemental vitamins. Eating difficulties: There are no  
ignore strangers, TV limitation, fire safety and bike helm

**Problem List/Past Medical** (Erin A Yarkosky, CNP; 11/11/2015 6:27 PM)  
**No Known Problems.** 11/11/2015 (Marked as Inactive)

**Allergies** (Erin A Yarkosky, CNP; 11/11/2015 10:12 PM)  
**No Known Drug Allergies.** 11/11/2015

**Immunization History** (Erin A Yarkosky, CNP; 11/11/2015 10:12 PM)  
**Up to date**

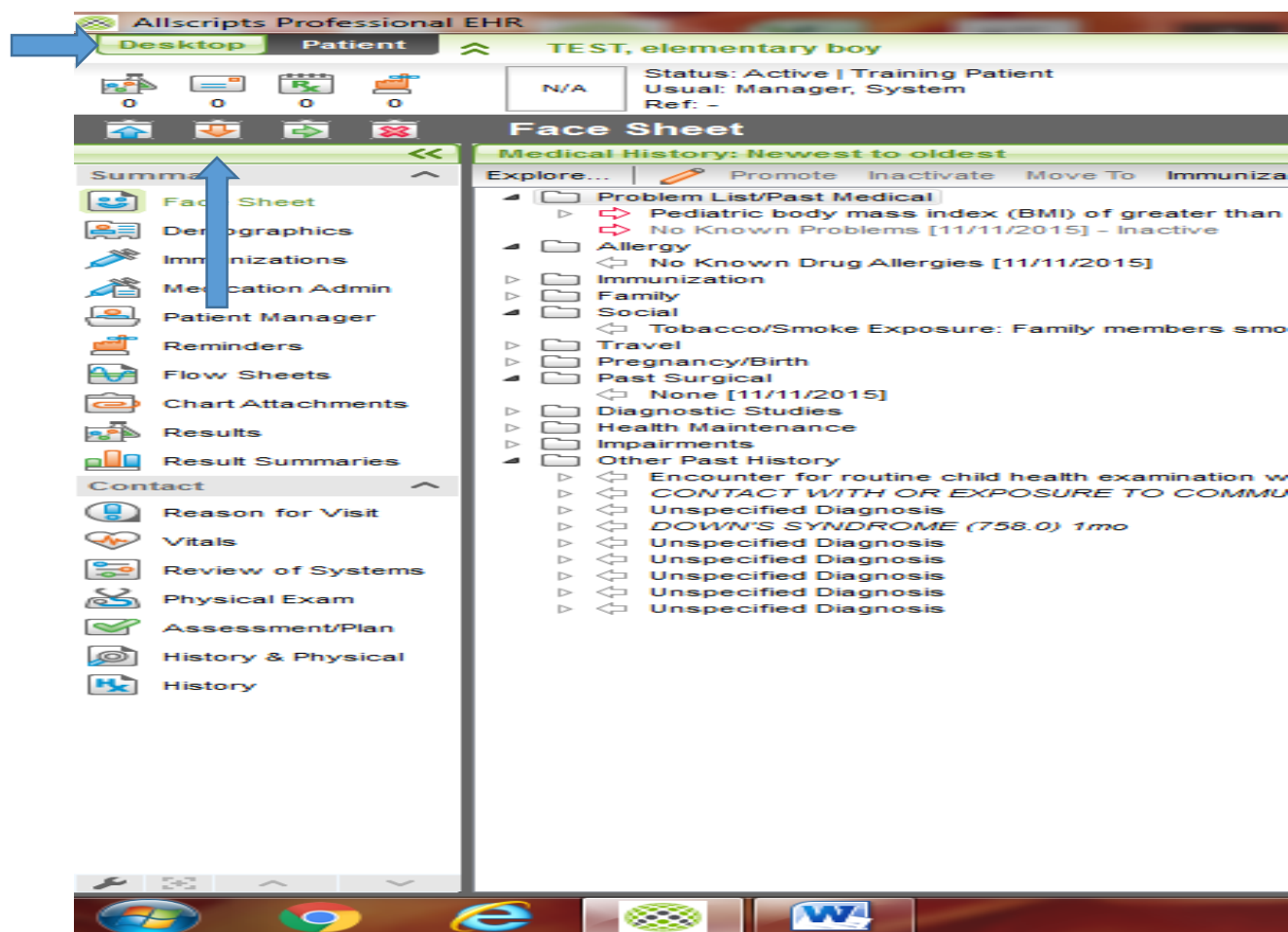
**Social History** (Erin A Yarkosky, CNP; 11/11/2015 10:12 PM)  
**Tobacco/Smoke Exposure.** Family members smoke

**Medication History** (Erin A Yarkosky, CNP; 11/11/2015 10:12 PM)  
Acetaminophen (160MG/5ML Suspension, Suspension C

**Past Surgical History** (Erin A Yarkosky, CNP; 11/11/2015 10:12 PM)  
**None.** 11/11/2015

**Other Problems** (Erin A Yarkosky, CNP; 11/11/2015 10:12 PM)  
**DOWN'S SYNDROME (758.0) 1mo**  
**Unspecified Diagnosis**  
**CONTACT WITH DR EXPOSURE TO COMMUNICABLE**

29. When the previous steps have been completed, file the chart by clicking the down arrow, then Desktop to return to the list of patients. Repeat steps 8 through 29 for each chart to be reviewed. Save the data to the YarkoskyDNP folder on the desktop after every 5<sup>th</sup> chart review.



- Maximum charts to be reviewed at one time should be no more than 30 to prevent fatigue.
- For technical difficulties with Allscripts, call the IT help desk through Wilson Health at extension 5342.
- At the completion of each session, log out of Allscripts as you would normally with the “x” in the top right corner. Save all collected data to the desktop file YarkoskyDNP and email a copy to eyarkosky@osu.edu, then log off the computer work station as usual. Data will then be transferred to the research drive Graham\Yarkosky by the DNP student.